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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/685,643
Filing Date: October 15, 2003
Appellant(s): VIZZINI ET AL.

MAILED
DEC 28 2005
GROUP 1700

Tenley Krueger
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 22, 2005 appealing from the Office action mailed April 11, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect. Only claims 12-14 are amended after final to remove the informalities in the claims.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is deficient. 37 CFR 41.37(c)(1)(v) requires the summary of claimed subject matter to include: (1) a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number, and to the drawing, if any, by reference characters and (2) for each independent claim involved in the appeal and for each dependent claim argued separately, every means plus function and step plus function as permitted by 35 U.S.C. 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth with reference to the specification by page and line number, and to the drawing, if any, by reference characters. The brief is deficient because, in the instant claims, the "adduct" is mixed with "an alkylchloride compound and/or benzoyl chloride" rather than "alkylchloride compound" alone as stated in appellants' line 3 of Summary of the Invention section.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

Whether the Examiner erred in rejection claims 1-9, 12-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over Kilty et al. (US 6,825,146) in view of Chen et al. (US 6,174,971) on grounds that the references teach, show or suggest the process recited in the pending claims.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-9, 12-15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilty et al. (US 6,825,146) in view of Chen et al. (US 6,174,971).

Kilty teaches the preparation of a Ziegler catalyst by (i) prepared a preferred procatalyst precursor, $Mg_dTi(OR^e)_eX_f$, by mixing magnesium dialkoxide, titanium alkoxide and titanium halide (col. 3, lines 3-5 and lines 20-45), (ii) halogenating the precursor with tetravalent titanium halide to convert residual alkoxide in the procatalyst precursor to chloride to provide a procatalyst, $Mg_{d'}Ti(OR^{e})_{e'}X_{f'}$, wherein e' < e (col. 3, lines 55-60; and col. 5, lines 1-12), (iii) treating the procatalyst with benzoyl chloride to further convert residual alkoxide in the procatalyst precursor to halide to provide a exchanged procatalyst, $Mg_{d'}Ti(OR^{e})_{e'}X_{f'}$, wherein e" < e' (col. 5, lines 13-17; and col. 6, lines 1-13), and (iv) halogenating the exchanged procatalyst particulates with titanium tetrachloride and removing the unreacted titanium tetrachloride to provide a procatalyst composition (col. 5, lines 51-59).

Kilty's steps (i) and (ii) together are equivalent to the step (a) of instant claim 1.

While Kilty does not expressly teach the preparation of magnesium dialkoxide from alkyl magnesium such as butylethylmagnesium and an alcohol such as 2-ethylhexanol, such process are well known in the art. For example, such a process is taught in Chen, see col. 4, lines 52-56, and col. 6, Example 1.

While Kilty does not expressly teach the ratio of benzoyl chloride to magnesium, the limitation is deemed to be result effective variables that one of ordinary skill in the art would be expected to manipulate to advantage based on a consideration of both economic and performance factors.

It is also understood that upon the addition of titanium tetrachloride in Kilty's step (ii), titanium tetrachloride and titanium alkoxides mixture can be viewed as $TiCl_n(OR')_{4-n}$ of the instant claim 5 wherein "n" is depended the ratio of titanium tetrachloride to titanium alkoxides.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ Kilty's process to prepare the procatalyst solid as in the instant claims since such is within the scope of Kilty's teaching and in the absence of any showing of criticality and unexpected results.

(10) Response to Argument

Appellants argue in the 2nd paragraph of page 3, "Kilty teaches contacting a solid precursor composition comprising magnesium, titanium and alkoxide (i.e., magnesium-titanium-alkoxide adduct) with a titanium halide to prepare a solid procatalyst composition. The solid procatalyst composition is then contacted with a benzoyl chloride halogenating agent." Appellants then summarize Kilty's process as:

" a. Ti-Mg-Alk + $TiCl_4 \rightarrow$ Ti-$MgCl_2$

b. Ti-$MgCl_2$ + benzoyl Cl $\rightarrow$ Ti-$MgCl_2$ "

Thus, Appellants assert, "Kilty does [not] teach, show or suggest the process recited in the pending claims. In particular, Kilty does not teach forming a magnesium-titanium-alkoxide adduct and contacting that adduct with an alkylchloride" (emphasis added).

On the contrary, as shown in the above rejection, Kilty expressly teaches the procatalyst solid is a mixed magnesium/titanium compound of formula $Mg_{d'}Ti(OR^{e})_{e'}X_{f'}$' (col. 5, line 1-12), wherein the OR^{e} is equivalent to Appellants' "Alk", i.e., $Mg_{d'}Ti(OR^{e})_{e'}X_{f'}$ is equivalent to Appellants' Ti-Mg-Alk, the magnesium-titanium-alkoxide adduct. The residual alkoxide moieties, $(OR^{e})_{e'}$, is then converted to chloride by metathesis reaction of benzoyl chloride with the procatalyst solid (col. 5, lines 13-16). It is noted that the electron donor "ED" is omitted from the formula $Mg_{d'}Ti(OR^{e'})_{e'}X_{f'}(ED)_{g'}$

for the purpose of simplicity here because ED is an optional component in Kilty's catalyst composition and ED is not at issue here.

For example, in Kilty's Example 1 of cols. 11-12, the reaction of magnesium diethoxide, titanium tetraethoxide and titanium tetrachloride to provide the solid precursor of $Mg_3Ti(OC_2H_5)_8Cl_2$, and the precursor composition is then reacted with titanium tetrachloride to provide the solid procatalyst $Mg_{d'}Ti(OC_2H_5)_{e'}Cl_{f'}$, the procatalyst is then reacted with benzoyl chloride to provide $Ti\text{-}MgCl_2$.

Therefore, Kilty's steps of (i) and (ii), contacting magnesium alkoxide, titanium tetraalkoxide, and titanium tetrachloride to provide the solid precursor and further contacting the solid precursor with titanium tetrachloride, encompasses the step (a) of the instant claims.

In view of the foregoing, Kilty's teaching does render the process of the instant claims obvious.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Primary Examiner

Conferees:

David Wu

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